



# Which Soap is Best ?



## Teacher Guide

This project enables students to learn about

- a) the functions of soap
- b) putting forward suggestions of how they will proceed.
- c) controlling variables to arrive at a valid conclusion

## Learning Outcomes by Lesson

At the end of lessons 1, students are expected to be able to:

- compare various soaps by cost  $g^{-1}$ ;
- cooperate as a team and with the whole class to ensure comparisons of cost  $g^{-1}$  can be made across a range of soaps.

At the end of lesson 2, students are expected to be able to:

- carry out an experiment to compare the solubility of soaps;
- put forward a meaningful procedure to enable soaps to be compared;
- answer questions in writing related to interpreting and checking the completeness of a table.

At the end of lesson 3, students are expected to be able to:

- interpret results from the experiment on comparing the solubility of soaps;
- carry out a set of tests to determine the cleansing ability of soaps
- answer questions in writing related to factors affecting the choice of soap

At the end of lessons 4, students are expected to be able to:

- explain the manner in which soaps act as cleaning agents;
- determine the 'best' soap with justifications related to general factors and cleaning ability.



## Suggested Teaching Strategy

1. This project can precede teaching about the cleaning ability of soap. It draws on the students prior knowledge in this area and can lead to the questions why some soaps were more effective than others, or why we now use detergents rather than soaps to clean clothes. It also precedes a consideration of what soap is or how it is made.
2. Part 1 is a simple exercise and to initiate this, the teacher may ask students themselves to bring in samples of soap. If this is the case, the teachers should instruct students to ensure that the price of the bar of soap is clearly marked on the outside of the soap and that the soap is wrapped so that the brand name is clearly visible.
3. The experiments in part 2 will need some planning on the part of the teacher. As it is not important that experiment 2 is undertaken for exactly 1 hour, probably the best procedure here is to initiate this experiment at the beginning of the lesson following part 1 and to remove the soap at the end of the lesson. The soap then dries until the students again meet in class which may be 1 day or longer.
4. During the rest of the lesson, students can design a further experiment and carefully explain what they hope this experiment will contribute to a comparison of different soaps. Students can also be guided to discuss the questions given for this part of the project. But most important of all, students can develop their ideas on how they might study the cleaning power of the soaps in the main part of the project which will follow in the next lesson. The teacher can collect these at the end of the lesson.
5. The teacher will be able to study the suggestions of the students for their project and prepare the required apparatus for this. Largely this will mean making available 'dirty' samples of cloth that can be compared easily using the facilities available in the laboratory.
6. Following the experiments, it is important that students write up their projects and put forward their reasons for deciding on the 'best' soap.



## Achieving the Objectives

1. Recognising factors that affect the choice of soap to buy.  
This aspect is achieved by undertaking parts 1 and 2 of the project. It should be further consolidated by the reasoning given by the students in determining their 'best' buy in part 4.
2. Put forward and carry out a procedure for testing the cleaning ability of soaps.  
This is part 3 of the project and the teacher will determine the students' ability to achieve this objective by marking written record of their suggested procedures and then observing and guiding their actions during the following practical session.



3. Put forward reasons for deciding on the 'best' buy.  
This is an integral component of part 4 of the project and the teacher will be able to determine how far this is being achieved by seeing the written records of students.
4. Ability of students to work as a member of a group  
This is achieved during the actual project in parts 1-4 in which students are expected to undertake the project as a group. Special attention to cooperation can be placed in part 1 where the results across groups will most probably be required.